Feeding hogs diets with decreasing net energy value

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Nothing impacts the cost of pork production more than feed energy level. We evaluated feeding lower than traditionally net energy (NE) levels to growing-finishing pigs through graded changes in basal dietary ingredients. In total, 1008 pigs (30 kg) housed in 48 pens of 21 barrows or gilts were fed diets providing 2.4, 2.3, 2.2, or 2.1 Mcal NE/kg and an equal standardized ileal digestible (SID) lysine/Mcal NE per growth phase over 5 growth phases (Grower 1: day 0-21, Grower 2: day 22-42, Grower 3: day 43-56, Finisher 1: day 57-70, Finisher 2: day 71 – slaughter weight). The experiment was conducted in a 2 x 4 factorial design resulting in 6 pens per NE level × sex. Pen BW and feed disappearance (ADFI) were measured at day 0, 21, 42, 56, 70, weekly thereafter, and at slaughter weight (124 kg). Warm carcasses were weighed and graded (Dextron).

For the entire trial, decreasing dietary NE by 0.1 Mcal/kg linearly increased ($P<0.001$) ADFI by 43 g and linearly decreased ($P<0.001$) feed efficiency (ADG:ADFI) by 0.007. Neither BW nor daily weight gain (ADG) was affected by NE level. The proportion of pigs remaining in pens after the start of shipping for slaughter (d70) was greatest ($P<0.05$) for pigs fed 2.1 Mcal/kg. Decreasing dietary NE by 0.1 Mcal linearly decreased ($P<0.01$) carcass dressing by 0.25%-points. Carcass backfat, loin depth, lean yield, index, and carcass lean gain (CLG) were not affected by dietary NE level. Decreasing dietary NE by 0.1 Mcal linearly increased ($P<0.001$) caloric efficiency by 1.5 g CLG/Mcal NE and lysinic efficiency by 0.5 g CLG/g SID lysine. Decreasing dietary NE linearly decreased ($P<0.001$) feed cost per tonne, per kg gain, and per pig, and increased income-over-feed-cost by more than 10 CA$ (61.02 vs 71.43 CA$ for pigs fed 2.4 and 2.1 Mcal/kg, respectively).

Implications: These results show that reduced NE diets (≤2.3 Mcal/kg) can be fed to growing-finishing pigs instead of traditionally fed energy levels (≥2.4 Mcal/kg) likely as long as pigs sustain feed intake. The most economically optimal dietary NE level in this study was 2.1 Mcal/kg, which is lower than current existing feed energy recommendations for growing-finishing pigs. Whether lower NE diets are economically optimal depends on the costs of lower NE ingredients like oats relative to wheat and barley.